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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,804	02/12/2004	Masud Beroz	TESSERA 3.0-236 DIV	5837

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EXAMINER	
QUINTO, KEVIN V	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,804	BEROZ ET AL.	
	Examiner	Art Unit	
	Kevin Quinto	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *23* is/are allowed.

6)☒ Claim(s) *5, 6, and 8-22* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 28, 2006 have been fully considered but they are not persuasive. The applicant has cancelled claims 1-4, added claims 9-23, and has amended claims 5-8 so that they depend on claim 9. However new independent claims 9 and 16 both describe structures with a scope wholly different from now cancelled independent claim 1. See the rejection below for further detail.

Claim Objections

2. Claim 20 is objected to because of the following informalities: the phrase "that movable away" is grammatically incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 13 contains the phrase, "the at least one lead has a first end permanently attached to said second microelectronic element and a second end releasably attached to said second microelectronic element." However this describes a structure in which

the lead has two ends which are both attached to the second microelectronic element. The examiner believes that the intended phrase in claim 13 is *the at least one lead has a first end permanently attached to said second microelectronic element and a second end releasably attached to said first microelectronic element* and has thus interpreted the claim in this manner.

6. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 22 contains the phrase, "said second end of said lead is releasably attached to the first surface of said second microelectronic element." However claim 20 states that the first end of the lead is "permanently attached to said second microelectronic element" which describes a structure in which the lead has two ends which are both attached to the second microelectronic element. The examiner believes that the intended phrase in claim 22 is *said second end of said lead is releasably attached to the first surface of said first microelectronic element* and has thus interpreted the claim in this manner.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 5, 6, and 8-22 are rejected under 35 U.S.C. 102(a,b) as being anticipated by Okamoto et al. (JP 59143352 A).

10. In reference to claim 9, Okamoto et al. (JP 59143352 A, hereinafter referred to as the "Okamoto" reference) discloses a structure which meets the claim. Figures 3 and 5 of Okamoto each disclose a microelectronic assembly with a first microelectronic element (4) having a contact bearing face and at least one contact (5) accessible at the contact bearing face. A second microelectronic element (1) opposes the first microelectronic element (4) and has a first surface including at least one lead (2) which extends over the surface. A first fusible material (8b, copper or nickel or palladium, abstract) engages the at least one contact (5). A second fusible material (8b, copper or nickel or palladium, abstract) engages the at least one lead (2). The first and second microelectronic elements (4, 1) are juxtaposed with one another so that the first and second fusible materials are in substantial alignment with one another. Palladium has a higher melting point than both nickel and copper while nickel has a higher melting point than copper (see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198). Okamoto anticipates the limitation "wherein one of said first and second fusible materials has a higher melting temperature and one of said first and second fusible materials has a lower melting temperature" since Okamoto discloses the use of three metals which have different melting points. The examiner notes the limitation regarding the liquid state and the solid state of the fusible materials. However this places claims 9-15 into the form of **product-by-process claims**:

> Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi* et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in " product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

Claim 9 does not distinguish over the Okamoto reference regardless of the liquid state or solid state of the fusible materials, *because only the final product is relevant*, and not the process of making.

11. In reference to claims 5 and 6, the first and second microelectronic elements (4, 1) are semiconductor chip packages.

12. With regard to claim 8, the lead (2) is made of copper, a known flexible material (Ley, USPN 6,362,522 B1, column 3, lines 63-65). It is understood that a plurality or array of leads is formed which extend between and electrically interconnect the first (4) and second (1) microelectronic elements.

13. In reference to claim 10, the first and second fusible materials are spaced from one another.

14. With regard to claim 11, the first and second fusible materials are conductive.

15. In reference to claim 12, the first and second fusible materials are connectable together for electrically interconnecting the first and second microelectronic elements (4, 1).

16. So far as understood in claim 13, the at least one lead (2) has a first end permanently attached to the second microelectronic element (1) and a second end releasably attached to the first microelectronic element (4). The second end is

releasably attached to the first microelectronic element (4) since the second fusible material (8b) can be formed of a material (lead, see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198) which has a lower melting point than that of the contact (5, gold, see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198).

17. In reference to claim 14, the at least one lead (2) overlies the first surface of the second microelectronic element (1).

18. With regard to claim 15, the at least one lead (2) is made of copper, a known flexible material (Ley, USPN 6,362,522 B1, column 3, lines 63-65).

19. In reference to claim 16, Okamoto (JP 59143352 A) discloses a structure which meets the claim. Figures 3 and 5 of Okamoto each disclose a microelectronic assembly with a first microelectronic element (4) having a contact bearing face and one or more contacts (5) provided at the contact bearing face. A second microelectronic element (1) juxtaposed with the first microelectronic element has a first surface and at least one lead (2) overlying the first surface. A first conductive mass (8b) is disposed on at least one contact (5). The first conductive mass (8b, copper or nickel or palladium, abstract) has a first melting temperature. A second conductive mass (8b, copper or nickel or palladium, abstract) is disposed on the at least one lead (2) and has a second melting temperature. The first and second conductive masses are spaced from one another. Palladium has a higher melting point than both nickel and copper while nickel has a higher melting point than copper (see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198). Okamoto anticipates the limitation "said second melting

temperature that is different than said first melting temperature" since Okamoto discloses the use of three metals which have different melting points.

20. With regard to claim 17, the first and second conductive masses are in alignment with one another.

21. In reference to claim 18, the examiner notes the limitation regarding the liquid state and the solid state of the conductive masses. However this places claim 18 into the form of a **product-by-process claim**:

> Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi* et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in " product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

Claim 18 does not distinguish over the Okamoto reference regardless of the liquid state or solid state of the fusible materials, *because only the final product is relevant*, and not the process of making.

22. With regard to claim 19, the first and second conductive masses are fusible together for electrically interconnecting the at least one contact of the first microelectronic element and the at least one lead of the second microelectronic element.

23. With regard to claim 20, the at least one lead (2) has a first end that is permanently attached to the second microelectronic element (1) and a second end that is movable away from the first surface of the second microelectronic element (1).

24. In reference to claim 21, the second conductive mass (8b) is disposed on the second end of the lead (2).

25. So far as understood in claim 22, the lead (2) is made of copper, a known flexible material (Ley, USPN 6,362,522 B1, column 3, lines 63-65). The second end is releasably attached to the first surface of the first microelectronic element (4) since the second conductive mass (8b) can be formed of a material (lead, see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198) which has a lower melting point than that of the contact (5, gold, see CRC Handbook of Chemistry and Physics, 81st edition, p.12-197 to 12-198).

26. Claims 5, 6, 8-20, and 22 are rejected under 35 U.S.C. 102(a,b) as being anticipated by Yamaji (USPN 5,536,973).

27. In reference to claims 9 and 15, Yamaji (USPN 5,536,973) discloses a structure which meets the claims. Figure 2 of Yamaji discloses a microelectronic assembly with a first microelectronic element (12) having a contact bearing face and at least one contact (12a) accessible at the contact bearing face. A second microelectronic element (11) opposes the first microelectronic element (12) and has a first surface including at least one lead (13), that is flexible (column 4, lines 33-45), which extends over the surface. A first fusible material (12b) engages the at least one contact (12a). A second fusible material (11a) engages the at least one lead (13). The first and second microelectronic elements (12, 11) are juxtaposed with one another so that the first and second fusible materials are in substantial alignment with one another. Yamaji anticipates the limitations "wherein one of said first and second fusible materials has a higher melting

temperature and one of said first and second fusible materials has a lower melting temperature" and "wherein one of said first and second fusible materials is in a liquid state and one of said first and second fusible materials is in a solid state" since Yamaji discloses that the other second fusible material and the lead (11a and 13) have a higher melting point than that of the bump (12b) since it is referred to as the low melting point material (column 4, lines 19-23) having a melting point which the reflow temperature must exceed in order to complete the connection process.

28. In reference to claims 5 and 6, the first microelectronic element (12) is a semiconductor chip package having a substrate while the second microelectronic element (11) is a semiconductor chip.

29. With regard to claim 8, an array of flexible leads (13) extends between and electrically interconnects the first (12) and second (11) microelectronic elements.

30. In reference to claim 10, the first (12b) and second (11a) fusible materials are spaced from one another.

31. With regard to claim 11, the first and second fusible materials are conductive.

32. In reference to claim 12, the first and second fusible materials are connectable together for electrically interconnecting the first and second microelectronic elements (12, 11).

33. So far as understood in claim 13, the at least one lead (13) has a first end permanently attached to the second microelectronic element (11) and a second end releasably attached to the first microelectronic element (12). The second end is releasably attached to the first microelectronic element (12) since the first fusible

material (12b) is formed of a material which has a lower melting point than that of the lead (13) and the contact (12a, (column 4, lines 19-23).

34. In reference to claim 14, the at least one lead (13) overlies the first surface of the second microelectronic element (11).

35. In reference to claim 16, Yamaji (USPN 5,536,973) discloses a structure which meets the claims. Figure 2 of Yamaji discloses a microelectronic assembly with a first microelectronic element (12) having a contact bearing face and one or more contacts (12a) provided at the contact bearing face. A second microelectronic element (11) juxtaposed with the first microelectronic element has a first surface and at least one lead (13) overlying the first surface. A first conductive mass (12b) is disposed on at least one contact (12a). The first conductive mass (12b) has a first melting temperature. A second conductive mass (11a) is disposed on the at least one lead (13) and has a second melting temperature. The first (12b) and second (11a) conductive masses are spaced from one another. Yamaji anticipates the limitation "said second melting temperature that is different than said first melting temperature" since Yamaji discloses that the second conductive mass and the lead (11a and 13) have a higher melting point than that of the first conductive mass (12b) since it is referred to as the low melting point material (column 4, lines 19-23) having a melting point which the reflow temperature must exceed in order to complete the connection process.

36. With regard to claim 17, the first and second conductive masses are in alignment with one another.

37. In reference to claim 18, Yamaji meets this claim since Yamaji discloses that the second conductive mass and the lead (11a and 13) have a higher melting point than that of the first conductive mass (12b) since it is referred to as the low melting point material (column 4, lines 19-23) having a melting point which the reflow temperature must exceed in order to complete the connection process

38. With regard to claim 19, the first and second conductive masses are fusible together for electrically interconnecting the at least one contact of the first microelectronic element and the at least one lead of the second microelectronic element.

39. With regard to claim 20, the at least one lead (13) has a first end that is permanently attached to the second microelectronic element (11) and a second end that is movable away from the first surface of the second microelectronic element (11).

40. So far as understood in claim 22, the lead (13) is flexible (column 4, lines 33-45). The second end is releasably attached to the first surface of the first microelectronic element (12) since the second conductive mass (12b) is formed of a material which has a lower melting point (column 4, lines 19-23) than that of the contact (12a).

Allowable Subject Matter

41. Claim 23 is allowed.

42. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

43. The following is a statement of reasons for the indication of allowable subject matter: the examiner is unaware of a microelectronic assembly with the explicit connective materials as disclosed by the applicant which are used to connect a severable wafer assembly to another microelectronic assembly.

Conclusion

44. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

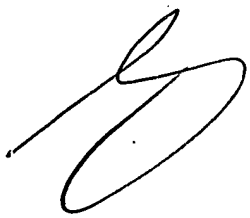
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KVQ



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